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Proceedings of a Regional Advisory Process Meeting on the Level of Allowable Mortality for Leatherback Turtle in Support of Species at Risk

31 March 2004
Hayes Boardroom
Bedford Institute of Oceanography
Dartmouth, NS

Michael Sinclair
Meeting Chairperson

Maritime Provinces
Regional Advisory Process
Bedford Institute of Oceanography
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Compte rendu d'une réunion du Processus consultatif régional au sujet de la mortalité acceptable d'une espèce en péril, la tortue luth

31 mars 2004
Salle Hayes
Institut océanographique de Bedford
Dartmouth (N.-É.)

Michael Sinclair
Président de séance

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August / août 2004

Canada

Foreword

The purpose of these proceedings is to archive the activities and discussions of the meeting, including research recommendations, uncertainties, and to provide a place to formally archive official minority opinions. As such, interpretations and opinions presented in this report may be factually incorrect or mis-leading, but are included to record as faithfully as possible what transpired at the meeting. No statements are to be taken as reflecting the consensus of the meeting unless they are clearly identified as such. Moreover, additional information and further review may result in a change of decision where tentative agreement had been reached.

Avant-propos

Le présent compte rendu fait état des activités et des discussions qui ont eu lieu à la réunion, notamment en ce qui concerne les recommandations de recherche et les incertitudes; il sert aussi à consigner en bonne et due forme les opinions minoritaires officielles. Les interprétations et opinions qui y sont présentées peuvent être incorrectes sur le plan des faits ou trompeuses, mais elles sont intégrées au document pour que celui-ci reflète le plus fidèlement possible ce qui s'est dit à la réunion. Aucune déclaration ne doit être considérée comme une expression du consensus des participants, sauf s'il est clairement indiqué qu'elle l'est effectivement. En outre, des renseignements supplémentaires et un plus ample examen peuvent avoir pour effet de modifier une décision qui avait fait l'objet d'un accord préliminaire.

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TABLE OF CONTENTS

Abstract / Résumé iv

Introduction 1

Review of Species Status 1

Review of Scope for Human-Induced Mortality 4

Review of Sources of Mortality 5

Appendix 1. List of Participants 8

Appendix 2. Letter of Invitation 9

Appendix 3. Agenda 11

Appendix 4. References 13

ABSTRACT

The leatherback turtle (*Dermochelys coriacea*) is designated as "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and is listed in Schedule 1 of the Species at Risk Act (SARA). The prohibitions associated with SARA come into force on June 1 2004; subsequently, leatherback turtles will become legally protected. SARA provides that the Minister of Fisheries and Oceans may issue a permit to allow for incidental harm to a listed species if specific conditions are met (SARA Section 73 (2, 3)). The analysis here will inform the Minister of Fisheries and Oceans in that decision.

RÉSUMÉ

La tortue luth (*Dermochelys coriacea*) a été désignée par le Comité sur la situation des espèces en péril au Canada (COSEPAC) comme espèce « en voie de disparition » et elle est inscrite sur la liste de l'annexe 1 de la *Loi sur les espèces en péril* (LEP). Les interdictions prévues dans la LEP doivent entrer en vigueur le 1er juin 2004 et cette population de tortues tombera subséquemment sous la protection de cette loi. La LEP prévoit que le ministre des Pêches et des Océans peut délivrer un permis en vue d'une activité susceptible d'entraîner des dommages fortuits pour une espèce figurant sur la liste de la LEP si certaines conditions sont remplies (LEP, article 73 (2, 3)). L'analyse présentée ici permettra au ministère des Pêches et des Océans de décider si l'activité proposée doit faire l'objet d'un permis.

INTRODUCTION

The chair, M. Sinclair, opened the meeting by greeting the participants (Appendix 1) and inviting them to introduce themselves. The letter of invitation and agenda are presented in Appendices 2 and 3, respectively.

The objective of the meeting was to review published scientific analyses and determine if the incidental encounter of Atlantic leatherback turtles in Canadian fisheries would jeopardise the survival or recovery of the Atlantic component of the species. In support of this objective, a working paper was considered: McMillan, J., and D. Bowen. 2004. Potential Impacts of Atlantic Canadian Fisheries on Leatherback Turtles (*Dermochelys coriacea*). RAP Working Paper 2004/26.

The products of the meeting are 1) these proceedings, which provide details of the discussions generated in review of the working paper, and 2) a status report providing the conclusions of the review.

The Chair described the structure of the meeting. The rapporteur was identified as A. McPherson. The primary author (J. McMillan) of the working paper presented the results of the analyses, after which during which questions of clarification were addressed. Participants were then given the opportunity to comment on the content of the document. Subsequent to the meeting of March 31, 2004, it was determined that additional peer-reviewers were required to resolve issues arising from the discussions. Therefore, a second meeting, with additional participants, was convened on May 5, 2004 to review the status report (product 2, above) generated from the first meeting.

REVIEW OF SPECIES STATUS

Summary

The status of the leatherback turtle population in the Atlantic Ocean is difficult to assess because of their widespread distribution and limited accessibility.

There are a number of nesting colonies in the Atlantic basin. Many of these are quite small with fewer than 1,000 females. The largest colonies are located in the French Guiana/Suriname complex, Trinidad and Western Africa. These colonies are thought to represent over 70 % of the nesting females in the population. Recent analyses indicate the long-term trend for the Suriname colony seems to show an increase. However, other researchers believe that the French Guiana nesting colony has declined. Among smaller colonies, those in southeast Florida and St. Croix, for example, data indicate increasing numbers of nests for the past twenty years. While population data for Trinidad indicates more than 1,000 females nest there annually, trend data are lacking. Similarly nesting in West Africa is likely more than 1000 females nesting annually, but no trend data is available.

Nesting females may be a poor index of overall population size for several reasons. First, leatherback females exhibit relatively weak fidelity to nesting beaches and thus changes in numbers among colonies could partly be accounted for by movement of females among sites. Second, nesting beaches are continually being remolded by currents such that some beaches are abandoned and new ones established. It may take some time to discover new nesting colonies resulting in inaccurate interpretation of trends. Third, survey methods differ among the nesting colonies and consistent time series are not available from many colonies making comparisons over the population range difficult. Given these difficulties, at present it is not possible to determine if the Atlantic population is stable, decreasing or increasing.

There is also considerable uncertainty regarding growth rates, and age-at-maturity for leatherback turtles, whereas, juvenile and adult mortality rates are essentially unknown for this species. Using the best available information on the number of nesting-aged leatherback females in the Atlantic basin and the age distribution assumptions of Lewison et al. (2004), an estimate of the Atlantic population would be in the hundreds of thousands. This estimate must be treated with great caution as there are a number of important assumptions that cannot be validated without additional research. Nevertheless, this estimate does indicate that the size of the Atlantic leatherback population likely exceeds several hundred thousand individuals. There is no estimate of what fraction of the population may migrate into Canadian waters; however, adults and sub-adults of both sexes have been observed.

There is currently no agreed international recovery-target for leatherback turtles. In the absence of a recovery-target for this species or the Atlantic portion thereof, the review committee adopted a pragmatic interim recovery-target as an increasing number of nesting females in the Atlantic Ocean.

It is difficult to provide a precise estimate of the time frame required to achieve this target. However, given the life history traits of leatherback turtles, several decades of monitoring would likely be required to be confident that the interim recovery target was achieved.

Discussion

The sightings and distribution information of leatherback turtles in Atlantic Canadian waters were discussed. There is no evidence of a contraction in this distribution over time. The sightings data presented were volunteer sightings as opposed to survey data. It is recognized that this information is heavily biased due to variable participation and effort.

The conclusions drawn by Hilterman and Goverse (2004) were discussed. Meeting participants acknowledged that there was considerable uncertainty regarding these and other abundance estimates of nesting-aged females. Further, the analyses of Hilterman and Goverse (2004) have not been subject to formal peer review but was considered the best available information. It was decided that the uncertainties surrounding

estimates of population abundance would be described. Participants questioned whether we were ignoring known nesting colonies that might make a contribution to the Atlantic population of leatherback turtles. There was agreement to include whatever trajectory information was available for each of the known nesting areas. One participant suggested breaking the nesting areas into three groups based on abundance (e.g. greater than 1000 nesting females, less than 1000, less than 200).; however, the group agreed that this might be providing greater detail than required. Participants agreed that given the information to date, there is considerable uncertainty in trends in abundance, at the scale of the Atlantic.

Participants also concluded that standardization of methodology was required to refine the precision of leatherback turtle abundance estimates.

The approach to estimate leatherback turtle population abundance used by Lewison et al. (2004) was evaluated and their methodology applied to the Atlantic population. Participants applauded the efforts of Lewison et al. but questioned their extrapolations. A number of participants objected to the use of Kemp's ridley turtle biological information as a proxy for leatherback turtle. The estimate of 1,264,000 turtles (of all ages) calculated by Bowen and McMillan was discussed. Although it was acknowledged that there may be different survival rates among the age classes and between the sexes, and there are many other assumptions associated with this estimate, it was concluded that despite the uncertainty, the Atlantic population size estimate was in line with the population size necessary to generate the Atlantic wide encounter rates that are being estimated. However, a more conservative estimate of abundance was agreed upon in light of the uncertainties discussed at the meeting.

Participants agreed that recovery targets and the timeframe for recovery were not easy to generate. The 1980 population is commonly used in the literature as a reference point as the first board scale survey and population estimates for leatherback turtles took place in 1980. However, these estimates remain controversial as they were based on aerial survey tracks. Because the age of first maturity of leatherback turtles is unknown, it was concluded that the timeframe for observing an increase in population trajectory of the Atlantic leatherback turtle population would be in the order of decades.

Recommendations for the Research Document

It was suggested that the authors note that there is no evidence for a change in the distribution of leatherback turtles in the Atlantic Ocean.

The authors were requested to include some indication of 1980 leatherback turtle abundance estimates for comparison.

Within the discussion of recovery feasibility, text should be revised to clarify that it is solely the Atlantic population under consideration. The authors were also advised to remove the word "staggering" from this paragraph.

REVIEW OF SCOPE FOR HUMAN-INDUCED ACTIVITIES

Summary

Although leatherback turtles are designated as endangered in Canada based on an assessment of the global population, for the purposes of this assessment, only the Atlantic population was considered. Simulations, based on a hypothetical life table model, conclude that leatherback turtles could maintain a stable population only if both juvenile and adult survivorship were high. Based on model simulations, it is believed that leatherback turtles could sustain a human-induced mortality rate of up to 1%.

Given that the population likely exceeds several hundred thousand animals, the geographic extent of the population has not changed (suggesting that suitable habitat is available to permit population growth), limited reports of population stability despite the current encounter rate and model results suggesting the population can sustain human-induced mortality up to about 1 %, the review committee concluded that there was scope for human-induced mortality without jeopardizing survival or recovery of this species.

Discussion

When questioned on the various parameters used by Spotila *et al.* (1996), Lewison *et al.* (2004) and the authors in these analyses, the authors acknowledged that all calculations were based on assumptions (vital rates etc).

Because there are no reliable estimates for the intrinsic rate of natural increase of leatherback turtles, the authors proposed a conservative estimate of half of the theoretical value for cetaceans in the PBR analysis. A number of participants expressed concern regarding this approach; one participant suggested using the intrinsic rate of increase of loggerhead turtle (as used in PBR) – 7%. Further, participants observed that mortalities associated with one gear sector may surpass the PBR estimate for the Atlantic Ocean. The authors responded that the goal of PBR is to reach a conservation target over some aggressive timeframe. It was then concluded that the PBR estimate was overly conservative given the previous population abundance discussions. In addition, the 1.2 million abundance estimate was used and therefore all of the additional caveats (above) apply to the PBR estimate as well. Therefore, meeting participants agreed that the PBR calculation be removed from the status report.

A participant from the U.S. described recent work on post-encounter mortality rates of leatherback turtles. New guidelines have been drafted based on the findings of a committee of veterinarians, scientist and industry representatives. This committee concluded that all categories of hooking would be more hazardous to leatherback turtles than other sea turtles and that the extent of gear removal was highly correlated with survival.

Recommendations for the Research Document

Authors were asked to search for an estimate of intrinsic rate of natural increase for marine reptiles. Potential sources included Crouse et al. 1987 or 1994. If available, this value should be used in the PBR calculation. In addition, it was suggested that the authors further develop the rationale associated with each parameter in the PBR analysis.

REVIEW OF SOURCES OF MORTALITY/HARM

Summary

Canadian commercial fisheries operating in Atlantic Canadian waters are known to incidentally capture leatherback turtles.

In Canada, quantitative data on incidental capture exists only for the Atlantic pelagic longline fisheries. Observers reported no mortalities in this fishery during the period 2001-2003. However, based on estimated encounter rates from DFO observer data and post-release mortality estimates drawn from studies by the National Marine Fisheries Service (NMFS 2001) in the US, about 30 leatherback turtles mortalities may have occurred each year in this Canadian fleet. These estimates are quite uncertain because the estimates of post-encounter mortality rates are taken from studies on another species of sea turtle (the loggerhead), and it is thought they may underestimate leatherback mortalities. One participant provided information that suggests that J. Musick challenged the post-release mortality estimates produced by the US. After analyzing data collected by US observers, Musick purportedly concluded that post-release mortalities of leatherbacks in this fishery, off the Grand Banks, "may approach nil". However, the contents of the challenge were not peer-reviewed. It is widely acknowledged that there is a high likelihood of some post-release mortality in capture mortality of leatherbacks stemming from their stress response to capture, when hooks are deeply ingested, or when gear is not completely removed at release.

There also is evidence that leatherback turtle mortality in Canadian Atlantic waters is caused by entanglement in ropes and lines associated with fixed gear fisheries. There are few quantitative data for these gear types in which observations of mortalities are accompanied with measures of survey effort such that encounter rates may be estimated. Nevertheless, observations confirm that leatherback turtles are fatally entangled in these gear sectors.

Estimates of incidental capture of leatherback turtles in the Atlantic Ocean range from 30,000 to 60,000 (Lewison *et al.* 2004) for one gear sector (offshore pelagic long-line fleet) alone in 2000. Although these estimates should be considered tentative, because of the assumptions underlying the calculations, they illustrate that tens of thousands of leatherbacks are incidentally encountered each year in the Atlantic Ocean.

The risk associated with each fishery cannot be assessed but the results of a meeting on turtle by-catch in Canadian Atlantic fisheries (O'Boyle 2001) are offered as the best available information:

Gear	Targeted Species	Area / Season	Comment	Potential for Interaction?
Longline	Groundfish	All areas & seasons	Hooks set close to bottom but entanglement a concern	Yes
	Pelagic	Atlantic Coast	Observations available	Yes
Gillnet	Herring	Newfoundland	Bait fishery; not regularly tended	Yes
	Herring	4T	Entanglement a concern but turtles not in 4T	Low
	Groundfish	5Z	Cod fishery	Yes
	Mackerel	4T	Bait fishery ; not many leatherbacks enter Gulf	Low
	Mackerel	4X	Bait fishery all year	Yes
Dredge	Scallop / Clam	Subarea 4; all seasons	Bottom temperatures below 10 C.	Low
Trap	Lobster	Nfld (May – June)	Limited season	Low
	Lobster	4T (May – Oct)	Entanglement a concern but turtles not in 4T	Low
	Lobster	4VW (May – July)	Limited season	Low
	Lobster	4X inshore (Nov – June)	Outside of turtle season	Low
	Lobster	4VWX5Z Offshore	Turtles in this area	Yes
	Groundfish / Pelagic	All areas & seasons	Entanglement a concern	Yes
Pot	Snow Crab	3L (April – Sept)	Entanglement a concern	Yes
	Snow Crab	4T (April – Sept)	Entanglement a concern but turtles not in 4T	Low
	Snow Crab	4VW (April – Sept)	Entanglement a concern	Yes
Trawl	Shrimp	2J3K	Nordmore grates	Low
	Shrimp	4VsW	Nordmore grates	Low
	Groundfish	All areas & seasons	Bottom temperatures below 10 C.	Low
Purse Seine	Herring	All areas & seasons	Entanglement not a concern	Low
Weir	Herring	Bay of Fundy	Turtles not in bay	Low
Other gears *	Various	All areas & seasons		Low

* Lampara, jigger, troller line, handline, rod & reel, lift net, hand dredge, rake & thong, beach & bar seine, harpoon, seal hunting

Discussion

It was noted that although turtles are often observed to swim away (post-encounter), survival may be short-lived.

The authors were questioned on the calculation of their mortality estimates for leatherback turtle encounters with the pelagic longline fleet. The authors indicated that they had prorated the "unable to determine" category of encounter across all of the other categories. This resulted in a mean mortality rate of 0.199 for this fishery. One participant questioned the data provided by Javatech; the participant contended that reports from vessel captains seem contrary to the information provided.

With respect to the documentation of encounters with the pelagic longline fleet, the sample sizes may be insufficient to assess whether or not leatherback turtle encounters are associated with one hook type over another. However, a participant confirmed that the proportion of circle hooks increased from 2001 to 2002. As a result, it is likely that the incidence of encounters with circle hooks increased in 2002.

There was some discussion on the level of post-hooking mortality. The participants concluded that it is difficult to estimate post-hooking mortality but at least one participant reported observing multiple turtles attached to several feet of line. The line must be cut right at the hook for the best chance of survival. A participant also questioned the utility of the US post-encounter mortality estimates as these are based on empirical studies on loggerhead turtles then extrapolated to leatherback turtles. However, there was general agreement that turtles ingesting hooks have an increased probability of mortality. However, based on observer data in Canadian large pelagic fleet, no leatherback turtle mortalities have been observed.

Based on the U.S. mortality estimates and encounter rate observed in Atlantic Canadian waters in the longline fleet, there is some level of leatherback turtle mortality. However, participants concluded that this level of mortality is largely minor compared to the mortality/threat as described by Lewison et al. (2004).

There was some discussion on potential mitigating measures that could be undertaken. Specifically, the issue of observer coverage was tabled by the authors. It was acknowledged that there is currently a varying requirement of observer coverage and/or monitoring associated with fisheries that might impact leatherback turtles.

Recommendations for the Research Document

The authors were asked to consider replacing the term "mortality rate" in their document to "mortality rate from encounters" to avoid confusion.

It was suggested that the authors remove the references to NOAA in this section.

The authors were asked to include information on the proportion of circle vs J hooks used in each year.

The authors were asked to remove reference to "controversial fishery" and reword " Canadian actions alone will accomplish nothing" in their document.

Appendix 1: List of Participants. [1] identifies participants who were only in attendance for the first meeting and [2] identifies those only in attendance for the second meeting.

Participant	Affiliation/Address	Telephone	E-mail
Atkinson, Troy	NS Swordfishermen's Association	902-457-4968	hiliner@ns.sympatico.ca
Berhart, David[2]	NOAA National Marine Fisheries Service	727-570-5312	David.Bernhart@noaa.gov
Bowen, Don	DFO, Science, Maritimes	902-426-8909	BowenD@dfo-mpo.gc.ca
Doherty, Penny	Ecology Action Centre	902-429-2202	pennydoherty@yahoo.com
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Epperly, Sheryan[2]	NOAA National Marine Fisheries Service	305-361-4207	Sheryan.Epperly@noaa.gov
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Gray, Patrick[1]	Atlantic Shark Association	902-475-1111	pocket.fisheries@ns.sympatico.ca
Herritt, Cecil[1]	Prospect Area Full-time Fishermen's Association	902-823-2523	paffa@sprint.ca
James, Michael	Dalhousie University	902-494-6182	mjames@mscs.dal.ca
Jones, Robert	DFO, Biodiversity Science, National Capital Region	613-990-0306	JonesRPW@dfo-mpo-gc.ca
Macnab, Paul	DFO, Oceans and Coastal Management, Maritimes	902-426-6391	MacnabP@dfo-mpo.gc.ca
McMillan, Jim	DFO, Science, Maritimes	902-426-3516	McMillanJ@dfo-mpo.gc.ca
McPherson, Arran	DFO, Species at Risk Coordination, Maritimes	902-426-8503	McPhersonA@dfo-mpo.gc.ca
Merriman, Cathy[2]	WWF; Atlantic Regional Office	902-482-1104	cmerriman@wwfcanada.org
Murphy, Odette	DFO, Fisheries Management, Maritimes	902-426-9609	MurphyO@dfo-mpo.gc.ca
O'Boyle, Robert[2]	DFO, Regional Advisory Process Office	902-426-3526	oboyler@dfo-mpo.gc.ca
Querbach, Kirsten	DFO, Science, Maritimes	902-426-7958	QuerbachK@dfo-mpo.gc.ca
Richards, Paul[2]	NOAA National Marine Fisheries Service		paul.richards@noaa.gov
Rudd, Murray	DFO, Policy & Economics, Maritimes	902-426-4825	RuddM@dfo-mpo.gc.ca
Ryder, Cheryl[1]	NMFS Alaska Fisheries Science Center, USA	206-526-4791	Cheryl.Ryder@noaa.gov
Sasso, Chris[2]	NOAA National Marine Fisheries Service	305-361-4279	Chris.Sasso@noaa.gov
Sinclair, Michael	DFO, Science, Maritimes	902-426-3490	SinclairM@dfo-mpo.gc.ca
Weber, Gary	DFO, Fisheries Management, Maritimes	902-426-1488	WeberG@dfo-mpo.gc.ca

Appendix 2: Letter of Invitation

Fisheries and Oceans Pêches et Océans

22 March 2004

Re: Regional Advisory Process review on level of allowable mortality associated with commercial fishing on Leatherback Turtles

The prohibitions associated with the Species at Risk Act (SARA) are scheduled to come into force on June 1 2004; subsequently, leatherback turtles will become legally protected from activities that contravene these prohibitions. SARA provides that the Minister of Fisheries and Oceans may issue a permit to allow for incidental harm to a listed species if a number of conditions are met (SARA Section 73 (2, 3)). In support of this evaluation, Fisheries Management Branch has requested scientific advice on whether or not incidental harm (carried out by commercial fishing activities) would jeopardise survival or recovery of leatherback turtles. Advice is also being sought on the effectiveness of potential mitigating measures to minimize or reduce the impact of commercial fishing on leatherback turtles. This analysis will allow the Minister of Fisheries and Oceans to determine the basis under which permits are to be issued in the commercial fisheries in Atlantic Canadian waters.

Due to the timeline required and the nature of the existing data, a Regional Advisory Process (RAP) has been scheduled for **Wednesday March 31 2004** to review the advice generated by Fisheries and Oceans science staff. Therefore, we invite your participation in this review which is scheduled to **begin at 9:00 AM and conclude at 12:00 PM** in the Hayes Boardroom of the Bedford Institute of Oceanography.

Thank you for your consideration of this request. I would appreciate confirmation of your participation (either in person or via telephone) in this process to Lynn Cullen @ 902-426-4164.

Yours sincerely,

Robert O'Boyle
Associate Director of Science; RAP Co-ordinator

BACKGROUND

SARA authorizes competent ministers (the Minister of the Environment and the Minister of Fisheries and Oceans) to enter into an agreement or issue a permit authorizing otherwise prohibited activities affecting a listed wildlife species, any part of its critical habitat, or the residences of its individuals. Sections 73-78 of the Act set out the conditions under which an agreement may be entered into or a permit issued, as well as the nature of the terms and conditions that may be included in such permits and agreements.

The competent ministers will be prepared to issue permits or enter into agreements in accordance with sections 73-75 of SARA on June 1, 2004 when the prohibitions sections of the Act come into force.

What activities may be authorized?

Under section 73(2) of SARA, authorizations may only be issued for one or more of the following purposes:

(a) the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
(b) the activity benefits the species or is required to enhance its chance of survival in the wild; or
(c) affecting the species is incidental to the carrying out of the activity

Under what circumstances are activities authorized?

Section 73(3) establishes that authorizations may be issued only if the competent minister is of the opinion that all three of the following pre-conditions are met:

(a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
(b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
(c) the activity will not jeopardize the survival or recovery of the species.

Appendix 3: Agenda

Regional Advisory Process
Leatherback Turtle Allowable Mortality in Support of the Species at Risk Act
Hayes Boardroom, Bedford Institute of Oceanography
31 March 2004

9:00 **Welcome and introductions (Chair)**

9:10 **Presentation on allowable mortality for leatherback turtles (J. McMillan)**

9:40 **Questions of clarification**

10:10 **Focused discussion on:**
- Present species trajectory (and level of uncertainty)
- Present species status (and level of uncertainty)
- Recovery target and timeframe for reaching this target
- Whether human-induced morality can be permitted without jeopardizing survival or recovery of the species
- The maximum level of human induced mortality the species can sustain and not jeopardize survival of recovery of the species
- Major potential sources of mortality/harm and the level associated with each activity

11:00 **Additional comments on:**
- reasonable alternatives to the activities
- feasible measure to mitigate the impacts

11:30 **Next steps:**

1. If required, a summary for the public registry addressing conditions in Section 73

Under section 73(2) of SARA, authorizations may only be issued for one or more of the following purposes:

(d) the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
(e) the activity benefits the species or is required to enhance its chance of survival in the wild; or
(f) affecting the species is incidental to the carrying out of the activity

Section 73(3) establishes that authorizations may be issued only if the competent minister is of the opinion that all three of the following pre-conditions are met:

(d) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
(e) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
(f) the activity will not jeopardize the survival or recovery of the species.

2. If required, a summary species at risk status report for the CSAS website

Suggested headings include:
Summary
Species Status
Scope for Human-induced Mortality/Harm
Sources of Mortality/Harm
Rationale for Permitting

3. If appropriate, a research document that contains technical elements of the analysis.

12:00 **Adjournment**

Appendix 4: References

Hilterman, M.L., and E. Goverse, 2004. Annual Report on the 2003 Leatherback Turtle Research and Monitoring Project in Suriname. World Wildlife Fund – Guianas Forests and Environmental Conservation Project (WWF-GFECP) Technical Report of the Netherlands Committee for IUCN (NC-IUCN), Amsterdam, the Netherlands, 21p.

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